Remarks

This Response to Office Action is responsive to the Office Action mailed on December 6, 2005. Entry of this Response and reconsideration of the instant application in view thereof are respectfully requested.

Claims 1-4 and 6-9 are pending. Claims 1-4 and 6-9 are rejected. Claims 11-17 have been added to provide more details of the invention in the claims. Support for these claims is found on pages 5 (claims 11-12, 16), 6 (claims 13-14), and 1, 8, 17, and 26 (claims 15, 17). No new matter has been added.

Claim Rejections under 35 U.S.C. §102

Claims 1- 4 are rejected under 35 U.S.C. §102(b) as anticipated by Ruffner et al. (U.S. Patent No. 4,600,761). Applicants respectfully submit that Ruffner et al. neither teach nor disclose an aqueous composition comprising a polymer formed in the presence of t-alkyl hydroperoxides, t-alkyl peroxides, t-alkyl peresters, and mixtures thereof, wherein said t-alkyl group has at least 5 carbon atoms.

Ruffner et al. disclose a polymerization reaction that can be initiated "at lower temperatures using redox initiators such as t-butyl hydroperoxide/bisulfite." See, col. 8, lines 33-41. However, Ruffner et al. do not disclose the use of t-alkyl hydroperoxides with a t-alkyl group of at least 5 carbon atoms.

One skilled in the art of free radical polymerization knows that a free radical initiator forms an end group on the polymer chains it initiates, where the chemical structure of such end group is dependant upon the chemical structure of the initiator itself. One skilled in the art would therefore recognize that the chemical structure of polymer chains formed by the action of t-amyl hydroperoxide, t-hexyl hydroperoxide, 2-(4-methyl-cyclohexyl)-prop-2-yl-hydroperoxide, and 2,4,4-trimethylpenyl-2-hydroperoxide, and other t-alkyls with at least 5 carbon atoms would necessarily differ from that of polymer chains formed by any other initiator, and in this case, t-butyl hydroperoxide. Since the chemical structure of the polymer chains formed by using the initiators of Applicants' invention would differ from polymer chains formed by using the initiators disclosed in Ruffner et al., Applicants request this rejection be withdrawn.

Claims 1-4 are rejected under 35 U.S.C. §102(b) as anticipated by Kazuhiro (JP 09-143444). Applicants respectfully submit that Kazuhiro neither teaches nor discloses

an aqueous composition comprising a polymer formed in the presence of t-alkyl hydroperoxides, t-alkyl peroxides, t-alkyl peresters, and mixtures thereof, wherein said t-alkyl group has at least 5 carbon atoms.

Kazuhiro discloses redox system polymerization initiators used with hydrogen peroxide (see, paragraph 0019), but does not disclose the use of t-alkyl hydroperoxides, t-alkyl peroxides, t-alkyl peresters, and mixtures thereof, wherein said t-alkyl group has at least 5 carbon atoms. For the same reasons above, the chemical structure of the polymer chains formed by using the initiators disclosed in Kazuhiro would differ from those of the invention. Therefore, Applicants request this rejection be withdrawn.

Claims 1-4 are rejected under 35 U.S.C. §102(b) as anticipated by Sonnabend (U.S. Patent No. 4,384,096). Applicants respectfully submit that Sonnabend neither teaches nor discloses an aqueous composition comprising a polymer formed in the presence of t-alkyl hydroperoxides, t-alkyl peroxides, t-alkyl peresters, and mixtures thereof, wherein said t-alkyl group has at least 5 carbon atoms.

Similar to Ruffner et al., Sonnabend discloses the use of t-butyl hydroperoxide as an initiator in emulsion polymerization. See, col. 6, lines 7-18. However, Sonnabend does not disclose the use of t-alkyl hydroperoxides, t-alkyl peroxides, t-alkyl peresters, and mixtures thereof, wherein said t-alkyl group has at least 5 carbon atoms. As explained above, since the chemical structure of polymer chains formed from t-alkyl hydroperoxides, t-alkyl peroxides, t-alkyl peresters, and mixtures thereof, wherein said t-alkyl group has at least 5 carbon atoms, differ from chemical structures formed from t-butyl hydroperoxide, Applicants request this rejection be withdrawn.

Claim Rejections under 35 U.S.C. §103

Claims 6-9 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ruffner et al. in view of Dyer (U.S. Patent No. 4,672,005) or Kazuhiro in view of Dyer or Sonnabend in view of Dyer. Applicants assert that the combination of Ruffner et al. or Kazuhiro and Dyer does not teach no discloses Applicants' invention.

As described above, neither Ruffner et al. nor Kazuhiro disclose polymer chains formed from t-alkyl hydroperoxides, t-alkyl peroxides, t-alkyl peresters, and mixtures thereof, wherein said t-alkyl group has at least 5 carbon atoms. Dyer discloses a list of polymerization initiators including both t-amyl and t-butyl hydroperoxide to demonstrate

the advantage of the select initiators. See, col. 8, lines 4-25. However, in Dyer, the advantage of using the select initiators relates to modification of surface properties of materials, as opposed to solubilizing viscosity or thickening behavior, as described in the Application. As such, Dyer offers no motivation to select any particular initiator to provide any compositions having the advantages, including stability and appearance, of the present invention, and the combination of Ruffner et al. or Kazuhiro and Dyer would not result in a polymer formed from the initiators of the claims. Therefore, Applicants request this rejection be withdrawn.

Claims 1-4 and 6-9 are rejected under 35 U.S.C. §103(a) as being unpatentable over Brown et al. (U.S. Patent No. 6,545,084) in view of Slone et al. (U.S. Patent No. 5,401,802). Applicants assert that the combination of Brown et al. and Slone et al. neither teaches nor discloses Applicants' invention.

Brown et al. describe improving scrub resistance of coatings formulated with emulsion polymers as binders. See, col. 1, lines 8-12. Slone et al. describe improved elongation in elastomeric coatings and tack in adhesives formed from emulsion polymers. See, col. 1, lines 7-14. However, neither reference discloses soluble or swellable polymers.

In the present invention, Applicants disclose polymers, or thickeners, that are activated by the addition of base, which leads to swelling or solubilization of the polymer with the concomitant thickening of the aqueous formulation. See, page 1 and throughout specification.

One skilled in the art would not expect the polymers disclosed in either Brown et al. or Slone et al. to be swellable or soluble upon neutralization (adding base), nor would one skilled in the art expect these polymers to be useful in the applications cited in the current Application (see, p. 1, 8, 14, 17, 26) . As such, neither Brown et al. nor Slone et al. offer motivation to explore the use of their initiators in the compositions of the Application, and Applicants request this rejection be withdrawn.

Claims 6-9 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ruffner et al. in view of Brown et al. or Kazuhiro in view of Brown et al. or Sonnabend in view of Brown et al. Applicants respectfully submit that none of these references, alone or in combination, teach or disclose Applicants invention.

As described above, Ruffner et al., Sonnabend and Kazuhiro do not disclose an aqueous composition comprising a polymer formed in the presence of t-alkyl hydroperoxides, t-alkyl peroxides, t-alkyl peresters, and mixtures thereof, wherein said t-alkyl group has at least 5 carbon atoms. In addition, Brown et al. describe improving scrub resistance of coatings formulated with emulsion polymers as binders. See, col. 1, lines 8-12. Similar to the above, any combination of the polymers disclosed in Ruffner et al, Brown et al., Kazuhiro or Sonnabend would not be swellable or soluble upon neutralization, nor would one skilled in the art expect these polymers to be useful in the applications cited in the current Application (see, p. 1, 8, 14, 17, 26) . As such, Applicants request this rejection be withdrawn.

Conclusion

In view of the above remarks, Applicants believe that the pending claims are in condition for allowance, and early and favorable action is earnestly solicited.

This Paper is believed to be timely filed. However, if any additional fee is deemed required for consideration of this Response, the Commissioner is hereby authorized to charge such fee to Deposit Account No. 18-1850.

Respectfully submitted,

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Date

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